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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
THERKORN, ERNEST G

ART UNIT	PAPER NUMBER
1723	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/831,162	IRGUM ET AL.	
	Examiner	Art Unit	
	Ernest G. Therkorn	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-23 and 28-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-23 and 28-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15, 16, 31, 34, 35, and 36 are rejected under 35 U.S.C. 102(B) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wenzhi (U.S. Patent No. 5,589,069). The claims are considered to read on Wenzhi (U.S. Patent No. 5,589,069). However, if a difference exists between the claims and Wenzhi (U.S. Patent No. 5,589,069), it would reside in optimizing the elements of Wenzhi (U.S. Patent No. 5,589,069). It would have been obvious to optimize the elements of Wenzhi (U.S. Patent No. 5,589,069) to enhance separation.

Claims 15, 16, 31, 34, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of

Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214). At best, the claims differ from Wenzhi (U.S. Patent No. 5,589,069) in the clarity of reciting covalent bonding. Wenzhi (U.S. Patent No. 5,589,069) is considered to disclose covalent bonding on column 6, lines 31-32. In any event, Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) (page 177, column 2, lines 25-26 and 35-40) discloses that use of a permanently bonded immobilized ligand allows a fixed surface concentration under varying conditions and is a benefit to both analytical and preparative separations. Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) (page 177, column 1, the second full paragraph) discloses that zwitterionic ligands are generally bonded to their supports. Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) (in the three paragraphs under preparation of ion exchangers bridging pages 208-209) discloses the procedure to covalently bond groups to polystyrene to form a zwitterionic exchanger. It would have been obvious that Wenzhi (U.S. Patent No. 5,589,069)'s support is covalently bonded because Wenzhi (U.S. Patent No. 5,589,069) is considered to disclose covalent bonding on column 6, lines 31-32 and either because Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) (page 177, column 2, lines 25-26 and 35-40) discloses that use of a permanently bonded immobilized ligand allows a fixed surface concentration under varying conditions and is a benefit to both analytical and preparative separations or because Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) (page 177, column 1, the second full paragraph) discloses that zwitterionic ligands are generally bonded to their

supports and because Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) (in the three paragraphs under preparation of ion exchangers bridging pages 208-209) discloses the procedure to covalently bond groups to polystyrene to form a zwitterionic exchanger.

Claims 17, 22, 28, 32, 33, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) as applied to claims 15, 16, 31, 34, 35, and 36 above, and further in view of Viklund (Biotechnol. 1997, 13, 597-600). The claims differ from either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) in reciting polymerizing the zwitterionic groups to the carrier. Viklund (Biotechnol. 1997, 13, 597-600) (page 597) discloses attaching reactive polymer chains dramatically increases surface group density and discloses polymerizing a zwitterionic compound. It would have been obvious to polymerize zwitterionic groups to the carrier because Viklund (Biotechnol. 1997, 13, 597-600) (page 597) discloses attaching reactive polymer chains dramatically increases surface group density and discloses polymerizing a zwitterionic compound.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185), Kurganov (Journal of Chromatography, 548 (1991) pages 207-214), and Viklund (Biotechnol. 1997, 13, 597-600) as applied to claims 17, 22, 28, 32, 33, and 38 above, and further in view of Hatch (Industrial and Engineering Chemistry, Vol. 49. No. 11 November 1957, pages 1812-1819 and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214). The claim differs from either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185), Kurganov (Journal of Chromatography, 548 (1991) pages 207-214), and Viklund (Biotechnol. 1997, 13, 597-600) in reciting crosslinking. Hatch (Industrial and Engineering Chemistry, Vol. 49. No. 11 November 1957, pages 1812-1819 (page 1813, column 2, the second full paragraph and page 1816, the second and third columns) discloses that crosslinking zwitterionic chains affects their adsorption characteristics. Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) on page 207 discloses crosslinking agents are a desirable way to apply a polymeric layer. It would have been obvious to crosslink in either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185),

Kurganov (Journal of Chromatography, 548 (1991) pages 207-214), and Viklund (Biotechnol. 1997, 13, 597-600) because Hatch (Industrial and Engineering Chemistry, Vol. 49. No. 11 November 1957, pages 1812-1819 (page 1813, column 2, the second full paragraph and page 1816, the second and third columns) discloses that crosslinking zwitterionic chains affects their adsorption characteristics and because Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) on page 207 discloses crosslinking agents are a desirable way to apply a polymeric layer.

Claims 19-21, 23, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) as applied to claims 15-16 above, and further in view of Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) and Yang (U.S. Patent No. 6,039,876). At best, the claims differ from either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) in reciting surface activation. Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) (in the three paragraphs under preparation of ion exchangers bridging pages 208-209) discloses that chloromethylation is the art recognized way to attach zwitterionic groups to polystyrene. Yang (U.S.

Patent No. 6,039,876) (column 3, lines 57-65) discloses a chlorinated methyl group is the most preferred reactive group to attach functional groups to polystyrene. It would have been obvious to surface activate with a chloromethyl group in either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) because Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) (in the three paragraphs under preparation of ion exchangers bridging pages 208-209) discloses that chloromethylation is the art recognized way to attach zwitterionic groups to polystyrene and because Yang (U.S. Patent No. 6,039,876) (column 3, lines 57-65) discloses a chlorinated methyl group is the most preferred reactive group to attach functional groups to polystyrene.

Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) as applied to claims 15, 16, 31, 34, 35, and 36 above, and further in view of either Snyder, Introduction to Modern Liquid Chromatography, 1979, pages 493-499 or Viklund (Biotechnol. 1997, 13, 597-600). At best, the claims differ from either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu

(Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) in reciting a pore range of .01 to 10 microns. Wenzhi (U.S. Patent No. 5,589,069) (column 6, lines 30 and 37) discloses porous media. Snyder, Introduction to Modern Liquid Chromatography, 1979, pages 493-499 on page 494 discloses that 300 Angstrom (0.03 micron) pores allow the separation of molecules in the 1,000 to 100,000 molecular weight range and on page 499 discloses that combining media in the pore range of 500 Angstrom (0.05 microns) with media in the pore range of 100,000 Angstroms (10 microns) allows separation of molecules in the 500 to 2,000,000 molecular weight range. Viklund (Biotechnol. 1997, 13, 597-600) (Abstract, lines 5 and 6 and page 598, column 2, line 7) discloses that pores of 2.5 microns allow easy flow of mobile fluid. It would have been obvious to use pores in the size range of .01 to 10 microns either because Snyder, Introduction to Modern Liquid Chromatography, 1979, pages 493-499 on page 494 discloses that 300 Angstrom (0.03 micron) pores allow the separation of molecules in the 1,000 to 100,000 molecular weight range and on page 499 discloses that combining media in the pore range of 500 Angstrom (0.05 microns) with media in the pore range of 100,000 Angstroms (10 microns) allows separation of molecules in the 500 to 2,000,000 molecular weight range or because Viklund (Biotechnol. 1997, 13, 597-600) (Abstract, lines 5 and 6 and page 598, column 2, line 7) discloses that pores of 2.5 microns allow easy flow of mobile fluid.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in

view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) as applied to claims 15, 16, 31, 34, 35, and 36 above, and further in view of either Hatch (U.S. Patent No. 6,238,565) or Viklund (Biotechnol. 1997, 13, 597-600). At best, the claim differs from either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) in reciting use of a monolith. Hatch (U.S. Patent No. 6,238,565) (column 4, lines 24-30) discloses that with its ease of manufacturing and lack of bead shifting monoliths provide a surprising advantage over existing technology. Viklund (Biotechnol. 1997, 13, 597-600) (Abstract) discloses that monoliths allow easy flow of mobile fluid and do not deteriorate even at high flow velocities. It would have been obvious to use a monolith in either Wenzhi (U.S. Patent No. 5,589,069) alone or Wenzhi (U.S. Patent No. 5,589,069) in view of either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) either because Hatch (U.S. Patent No. 6,238,565) (column 4, lines 24-30) discloses that with its ease of manufacturing and lack of bead shifting monoliths provide a surprising advantage over existing technology or because Viklund (Biotechnol. 1997, 13, 597-600)

(Abstract) discloses that monoliths allow easy flow of mobile fluid and do not deteriorate even at high flow velocities.

Claims 15-17, 22, 28, and 31-38 are rejected under 35 U.S.C. 102(B) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Viklund (Biotechnol. 1997, 13, 597-600). The claims are considered to read on Viklund (Biotechnol. 1997, 13, 597-600). However, if a difference exists between the claims and Viklund (Biotechnol. 1997, 13, 597-600), it would reside in optimizing the elements of Viklund (Biotechnol. 1997, 13, 597-600). It would have been obvious to optimize the elements of Viklund (Biotechnol. 1997, 13, 597-600) to enhance separation.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Viklund (Biotechnol. 1997, 13, 597-600) in view of Hatch (Industrial and Engineering Chemistry, Vol. 49. No. 11 November 1957, pages 1812-1819 and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214). At best, the claim differs from Viklund (Biotechnol. 1997, 13, 597-600) in reciting crosslinking. Hatch (Industrial and Engineering Chemistry, Vol. 49. No. 11 November 1957, pages 1812-1819 (page 1813, column 2, the second full paragraph and page 1816, the second and third columns) discloses that crosslinking zwitterionic chains affects their adsorption characteristics. Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) on page 207 discloses crosslinking agents are a desirable way to apply a polymeric layer. It would have been obvious to crosslink in Viklund (Biotechnol. 1997, 13, 597-600) because Hatch (Industrial and Engineering Chemistry, Vol. 49. No. 11 November 1957, pages 1812-1819 (page 1813, column 2, the second full paragraph and page 1816, the second

and third columns) discloses that crosslinking zwitterionic chains affects their adsorption characteristics and because Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) on page 207 discloses crosslinking agents are a desirable way to apply a polymeric layer.

Claims 15-16, 31, 34, 35, and 36 are rejected under 35 U.S.C. 102(B) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Metz (U.S. Patent No. 4,577,013). The claims are considered to read on Metz (U.S. Patent No. 4,577,013). However, if a difference exists between the claims and Metz (U.S. Patent No. 4,577,013), it would reside in optimizing the elements of Metz (U.S. Patent No. 4,577,013). It would have been obvious to optimize the elements of Metz (U.S. Patent No. 4,577,013) to enhance separation.

Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metz (U.S. Patent No. 4,577,013) in view of either Snyder, Introduction to Modern Liquid Chromatography, 1979, pages 493-499 or Viklund (Biotechnol. 1997, 13, 597-600). At best, the claims differ from Metz (U.S. Patent No. 4,577,013) in reciting a pore range of .01 to 10 microns. Snyder, Introduction to Modern Liquid Chromatography, 1979, pages 493-499 on page 494 discloses that 300 Angstrom (0.03 micron) pores allow the separation of molecules in the 1,000 to 100,000 molecular weight range and on page 499 discloses that combining media in the pore range of 500 Angstrom (0.05 microns) with media in the pore range of 100,000 Angstroms (10 microns) allows separation of molecules in the 500 to 2,000,000 molecular weight range. Viklund (Biotechnol. 1997, 13, 597-600) (Abstract, lines 5 and 6 and page 598, column 2, line 7) discloses that

pores of 2.5 microns allow easy flow of mobile fluid. It would have been obvious to use pores in the size range of .01 to 10 microns either because Snyder, Introduction to Modern Liquid Chromatography, 1979, pages 493-499 on page 494 discloses that 300 Angstrom (0.03 micron) pores allow the separation of molecules in the 1,000 to 100,000 molecular weight range and on page 499 discloses that combining media in the pore range of 500 Angstrom (0.05 microns) with media in the pore range of 100,000 Angstroms (10 microns) allows separation of molecules in the 500 to 2,000,000 molecular weight range or because Viklund (Biotechnol. 1997, 13, 597-600) (Abstract, lines 5 and 6 and page 598, column 2, line 7) discloses that pores of 2.5 microns allow easy flow of mobile fluid.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Metz (U.S. Patent No. 4,577,013) in view of either Hatch (U.S. Patent No. 6,238,565) or Viklund (Biotechnol. 1997, 13, 597-600). At best, the claim differs from Metz (U.S. Patent No. 4,577,013) in reciting use of a monolith. Hatch (U.S. Patent No. 6,238,565) (column 4, lines 24-30) discloses that with its ease of manufacturing and lack of bead shifting monoliths provide a surprising advantage over existing technology. Viklund (Biotechnol. 1997, 13, 597-600) (Abstract) discloses that monoliths allow easy flow of mobile fluid and do not deteriorate even at high flow velocities. It would have been obvious to use a monolith in Metz (U.S. Patent No. 4,577,013) either because Hatch (U.S. Patent No. 6,238,565) (column 4, lines 24-30) discloses that with its ease of manufacturing and lack of bead shifting monoliths provide a surprising advantage over existing technology or because Viklund (Biotechnol. 1997, 13, 597-600) (Abstract)

discloses that monoliths allow easy flow of mobile fluid and do not deteriorate even at high flow velocities.

Claims 32, 33, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metz (U.S. Patent No. 4,577,013) as applied to claims 15, 16, 31, 34, 35, and 36 above, and further in view of Viklund (Biotechnol. 1997, 13, 597-600). The claims differ from Metz (U.S. Patent No. 4,577,013) in reciting polymerizing the zwitterionic groups to the carrier. Viklund (Biotechnol. 1997, 13, 597-600) (page 597) discloses attaching reactive polymer chains dramatically increases surface group density and discloses polymerizing a zwitterionic compound. It would have been obvious to polymerize zwitterionic groups to the carrier because Viklund (Biotechnol. 1997, 13, 597-600) (page 597) discloses attaching reactive polymer chains dramatically increases surface group density and discloses polymerizing a zwitterionic compound.

The remarks urge patentability based upon the allegation that Wenzhi (U.S. Patent No. 5,589,069) does not disclose covalent bonding. However, Wenzhi (U.S. Patent No. 5,589,069) is considered to disclose covalent bonding on column 6, lines 31-32.

The remarks urge that with regard to column 6, lines 31-32 of Wenzhi (U.S. Patent No. 5,589,069)'s teaching to form the zwitterionic layer directly on a carrier through chemical reaction, it is possible to bond zwitterionic compounds to themselves so that they do not bond to the support. However, since Wenzhi (U.S. Patent No. 5,589,069) is written to a person of ordinary skill in the art, the person of ordinary skill

would take this to mean the art's conventional covalent bonding rather than an exoteric meaning.

The remarks urge that Wenzhi (U.S. Patent No. 5,589,069) may not be combined with either Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) or Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) and Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) to enhance the clarity of Wenzhi (U.S. Patent No. 5,589,069)'s disclosure of covalent bonding. However, Wenzhi (U.S. Patent No. 5,589,069) is considered to disclose covalent bonding on column 6, lines 31-32. In any event, Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) (page 177, column 2, lines 25-26 and 35-40) discloses that use of a permanently bonded immobilized ligand allows a fixed surface concentration under varying conditions and is a benefit to both analytical and preparative separations. Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) (page 177, column 1, the second full paragraph) discloses that zwitterionic ligands are generally bonded to their supports. Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) (in the three paragraphs under preparation of ion exchangers bridging pages 208-209) discloses the procedure to covalently bond groups to polystyrene to form a zwitterionic exchanger. As such, it would have been obvious that Wenzhi (U.S. Patent No. 5,589,069)'s support is covalently bonded because Wenzhi (U.S. Patent No. 5,589,069) is considered to disclose covalent bonding on column 6, lines 31-32 and either because Yu (Journal of Chromatographic Science, Vol. 24, May 1986, pages 177-182) (page 177, column 2,

lines 25-26 and 35-40) discloses that use of a permanently bonded immobilized ligand allows a fixed surface concentration under varying conditions and is a benefit to both analytical and preparative separations or because Yu (Journal of Chromatographic Science, Vol.27, April 1989, pages 176-185) (page 177, column 1, the second full paragraph) discloses that zwitterionic ligands are generally bonded to their supports and because Kurganov (Journal of Chromatography, 548 (1991) pages 207-214) (in the three paragraphs under preparation of ion exchangers bridging pages 208-209) discloses the procedure to covalently bond groups to polystyrene to form a zwitterionic exchanger.

The remarks urge that Viklund (Biotechnol. 1997, 13, 597-600) is not directed to a zwitterionic compound. However, Wenzhi (U.S. Patent No. 5,589,069) (column 2, lines 56-63 and column 6, lines 46-59) defines a zwitterionic compound as having both a positive charge and a negative charge. Since Viklund (Biotechnol. 1997, 13, 597-600)'s compound has both a nitrogen portion and a sulfur portion, it is considered to be a zwitterionic compound because it has both a positive and a negative portion.

The remarks urge Metz (U.S. Patent No. 4,577,013)'s cellulose is not a resin. However, page 10, lines 2-8 of the instant specification appears to define resin as an organic polymer carrier of synthetic or natural origin. As such, Metz (U.S. Patent No. 4,577,013)'s cellulose would appear to be a resin.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to E. Therkorn at telephone number (703) 308-0362.

Ernest G. Therkorn
Primary Examiner
Art Unit 1723

EGT
August 12, 2003